

A foundry worker wearing a helmet and protective gear is pouring molten metal from a ladle. The scene is set in a foundry with industrial equipment visible in the background. The image is overlaid with a large white circular graphic.

REFRACTORY SOLUTIONS FOR FERROUS FOUNDRY

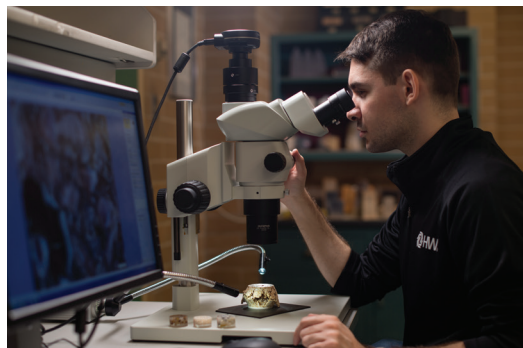
 **HWI**
A MEMBER
OF CALDERYS

HWI

Every day around the world, HarbisonWalker International's (HWI) people and products stand up to the challenges and pressures of every job. And for 150 years, we've been the gold standard for refractory products. We deliver one of the industry's widest, deepest lines of solutions. Our world-class products perform to the highest degree. And by bringing intensity, reliability, and passion to work every day, we're able to provide superior value to our customers and their businesses. Get to know the experts who anticipate, respond, and deliver like no one else. We're nearly 2,000 people with one goal: to keep your business moving forward.



HWI has been a dedicated supplier to the foundry industry for over 150 years, with one of the largest field services teams of any refractory supplier. Our expert application specialists know the challenges specific to your refractory processes, and customers trust the reliability of our products. HWI has you covered with over 1,500 high performance products for the toughest of applications, ranging from brick and mortars to castables and gunites.



THEY WORK WITH INTENSITY TOO.

HWI is associated with a preferred network of independent contractor/installers who, like us, work intensely to provide high-quality refractory construction and maintenance services.

From small emergency repairs to new plant construction, these companies have the skills, resources, and experience to meet your most demanding specifications and time constraints.

We invite you to get to know HWI's preferred contractor/installers. Look into their wide range of refractory industry experience. See why they have satisfied customers from coast to coast and around the globe.

To contact them directly, refer to our contractor/installer listings. And if you'd like more information about the C/I network, email CINetwork@thinkHWI.com.

PRODUCTS THAT PASS THE TEST. EVERY DAY.

Have high expectations for your refractory products? We do too. Our products set benchmarks for the industry, including FASTKAST® 80, KORUNDAL XD®, MAGNEL HF®, GUNTECH 60, and D-CAST 85 TMCC.

The competitive edge you're looking for starts with us — and with your dedicated HWI application specialist. They're experts who will understand every inch of your process and who will work intensely to optimize your refractory performance.

With the right products identified, we deliver with lightning speed—the products you need, when you need them. We ship around the world at a moment's notice. And we stock our most popular products so that you can have them the same day or the next day. Let us work with you to reduce your potential for downtime. .

APPLICATIONS

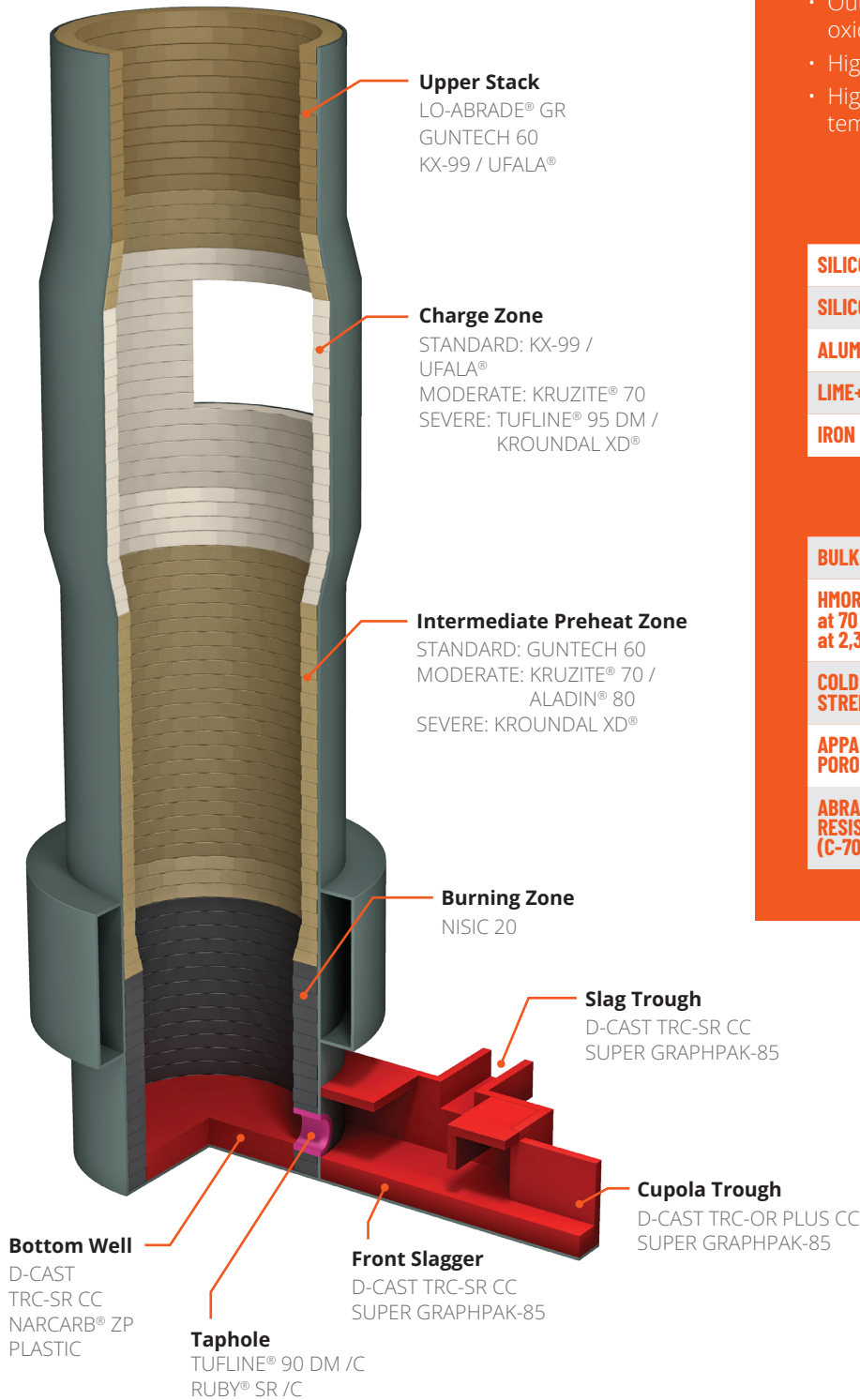
CUPOLA	5
INDUCTION FURNACES	7
VACUUM INDUCTION MELTER	11
CORELESS INDUCTION MELTER	12
ELECTRIC ARC FURNACE	13
ARGON OXYGEN DECARBURIZATION FURNACE	14
LADLES	15
POROUS PURGE PLUGS	17
REFRACTORY CERAMIC FIBER	18
SERVICE OFFERINGS	19

CUPOLA

With destructive factors ranging from thermal shock to slag attack to impact and abrasion, a strong product portfolio is necessary to optimize cupola performance. With such a diverse product offering, the HWI Application Team can optimize product selections to offer the best performance where needed while balancing economic solutions.

STANDARD, MODERATE AND SEVERE BRAND SELECTION FOR UPPER STACK, CHARGE AND INTERMEDIATE PREHEAT ZONES

	GUNTECH 60	KX-99	UFALA®	KRUZITE®-70	ALADIN® 80	KORUNDAL XD®	TUFLINE® 95 DM
UPPER STACK	X	X	X				
CHARGE ZONE	X	X	X	X	X	X	X
INTERMEDIATE PREHEAT ZONE	X			X	X	X	X
PRODUCT TYPE	60% Gun mix	Fireclay brick	Mullite brick	Mullite brick	High alumina brick	High alumina brick	High alumina brick
DENSITY lb/ft3 (g/cm3)	141 (2.26)	142 (2.27)	155 (2.48)	165 (2.64)	173 (2.77)	191 (3.06)	201 (3.22)
MOR psi (MPa)	2,500 (17.2)	1,700 (11.7)	2,300 (15.9)	1,800 (12.4)	1,900 (13.1)	2,200 (15.2)	2,200 (15.2)
CCS psi (MPa)	2,700 (18.6)	5,000 (34.5)	7,000 (48.3)	8,000 (55.2)	8,500 (58.6)	12,600 (86.9)	12,000 (82.8)



NISIC 20 FOR SEVERE CUPOLA MELTING APPLICATIONS

HWI is proud to offer the ultimate solution for cupola melting needs — the NISIC 20 brick. This nitride bonded silicon carbide brick is perfect for the cupola furnace melting zone due to its high operational temperature range and toughness.

- Outstanding slag and oxidation resistance
- High volume stability
- High operational temperature
- Increased campaign life less coke usage
- Less bottom drops with longer service life
- No maintenance gunning required

	CHEMICAL COMPOSITION, wt. %	
SILICON CARBIDE	(SiC)	77.0
SILICON NITRIDE	(Si ₃ N ₄)	20.5
ALUMINA	(Al ₂ O ₃)	1.2
LIME+MAGNESIA	(CaO+MgO)	1.0
IRON OXIDE	(Fe ₂ O ₃)	0.3

	PHYSICAL PROPERTIES	
BULK DENSITY	lb/ft³ (g/cm³)	167 (2.67)
HMOR at 70 °F (21 °C) at 2,300 °F (1260 °C)	psi (MPa)	5,000 (34.5) 7,000 (48.3)
COLD CRUSHING STRENGTH	psi (MPa)	24,000 (165.5)
APPARENT POROSITY	%	15.0
ABRASION RESISTANCE (C-704)	cc	3

INDUCTION FURNACES

Channel induction furnaces are used as holding vessels in iron foundries to keep iron homogenized and at temperature until it is ready for casting. Channel induction furnaces are designed as vertical units or horizontal units, both of which require high performance and tightly installed refractories to withstand the corrosive slag as well as the mechanical stress from the rotation of the unit itself. Each approach comes with its own unique refractory challenges, ranging from product selection to installation to performance optimization. HWI has a team of sales and application experts to help you get the most out of your channel induction furnace.

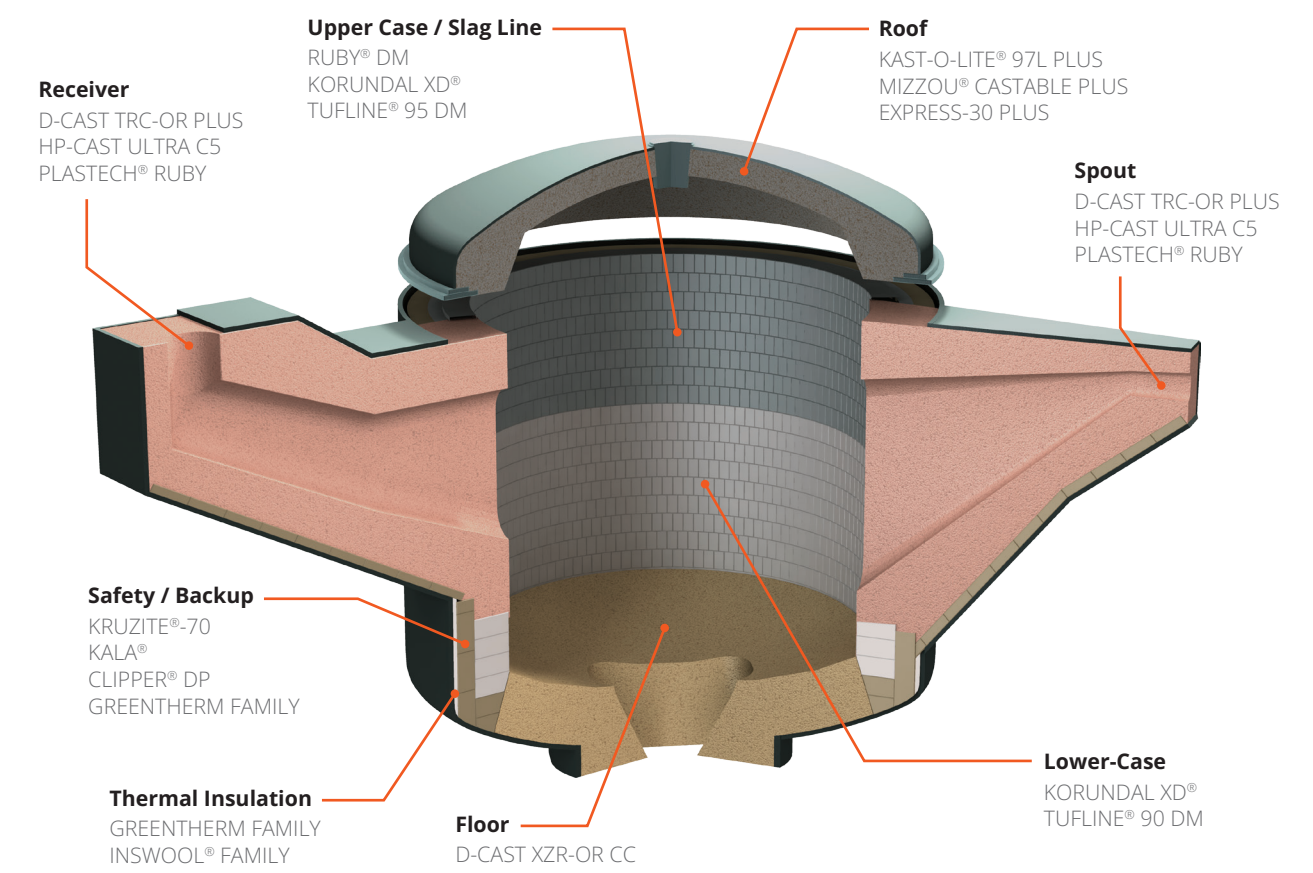
KORUNDAL XD®



The industry leader in refractoriness, KORUNDAL XD® is the leading choice for induction furnaces. This mullite bonded, high alumina brick will keep furnaces running for longer with less silica pickup, strong penetration resistance, and low wear rates. Thanks to its optimized composition and sintering behavior, KORUNDAL XD® has a homogenized mullite phase throughout its body, meaning that there will be consistent and low rates of wear throughout the service life of the vessel. Push your refractory performance to the maximum by choosing KORUNDAL XD®.

VERTICAL CHANNEL INDUCTION FURNACE

Slag formation is often inevitable and channel induction holding furnaces require refractories built to withstand slag buildup and corrosive mechanisms that could potentially lead to unexpected outages. HWI not only offers high performance refractory solutions to resist the various destructive mechanisms in these vessels, but can assist in engineering a total refractory package to increase efficiency and extend furnace lifetimes.

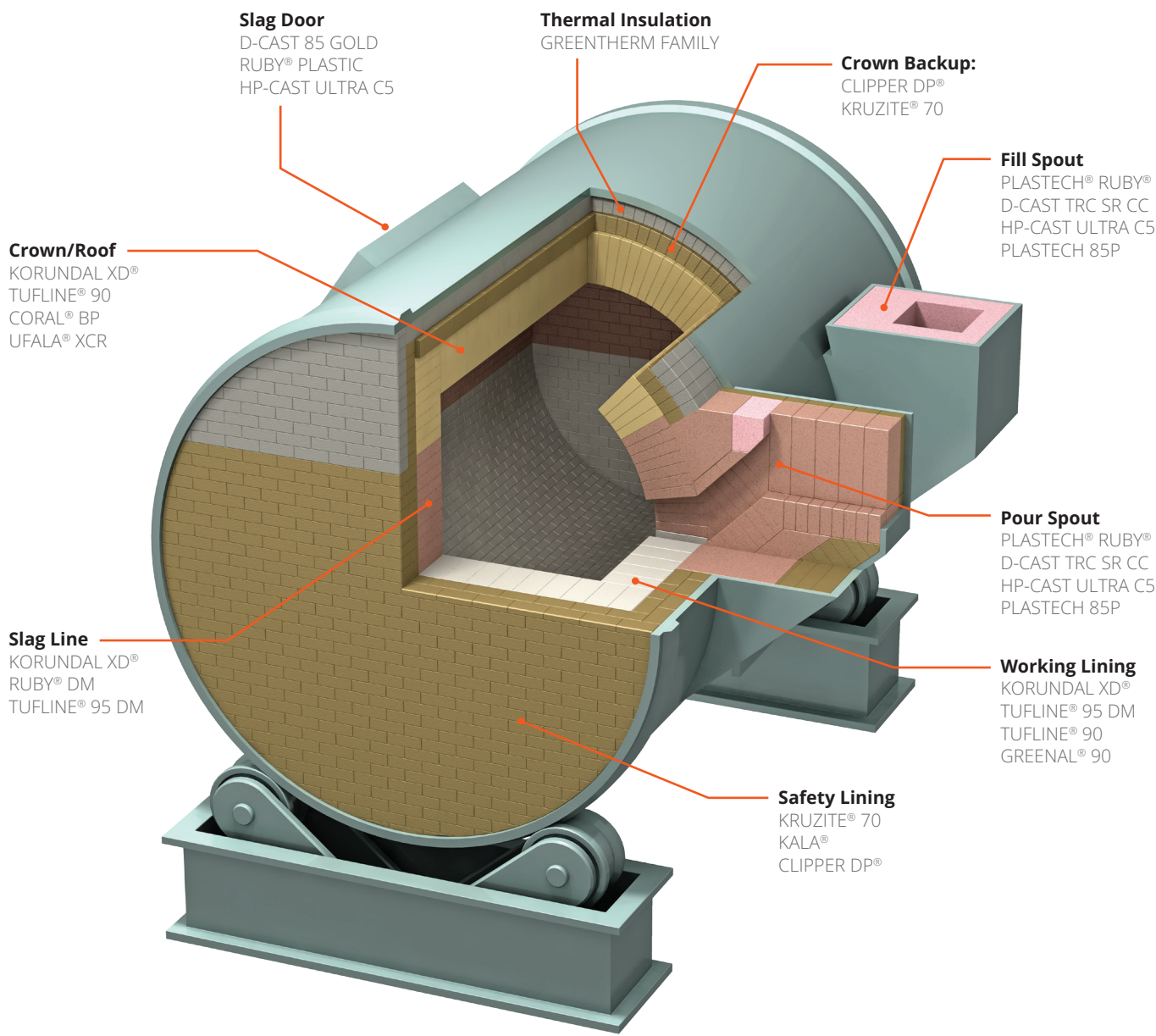


 Induction furnace slag lines see the most severe destructive mechanisms of the entire unit, having to endure high temperatures, corrosive slag, thermal shock and potential metal penetration. In order to get the most out of your vessel lifetime, HWI offers a variety of slag line products to stand up to these intense environments.

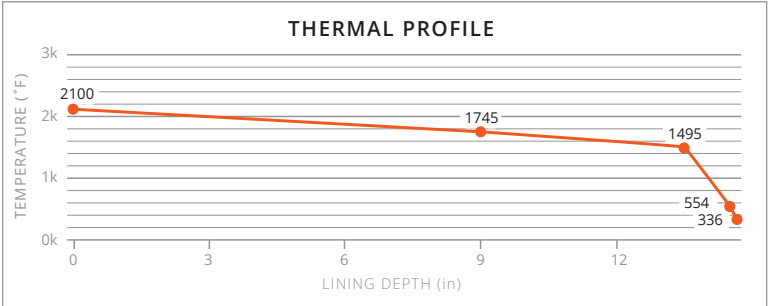
	KORUNDAL XD®	TUFLINE® 95 DM	TUFLINE® 98 DM	RUBY®	RUBY® DM
Al ₂ O ₃ (%)	90.0	94.2	97.6	89.7	89.6
SiO ₂ (%)	9.7	2.1	0.1	0.5	0.3
Cr ₂ O ₃ (%)				9.0	9.8
Fe ₂ O ₃ (%)	0.1	0.1	0.1	0.1	0.1
DENSITY lb/ft ³ (g/cm ³)	191 (3.06)	201 (3.22)	204 (3.27)	198 (3.17)	213 (3.41)
POROSITY (%)	15.4	15.0	14.6	17.8	12.6
CREEP 0-50hrs (%)	0.25 at 3,000 °F	0.1 at 2,900 °F	0.15 at 2,800 °F	0.4 at 3,300 °F	0.2 at 3,300 °F
THERMAL SHOCK RESISTANCE	Moderate	Excellent	Excellent	Moderate	Good

HORIZONTAL CHANNEL INDUCTION FURNACE

Horizontal Channel Induction Furnaces are traditionally fully bricked units due to the more complex geometry of the furnace. From metal penetration resistance below the melt, to slag penetration at the melt line to the high temperatures experienced in the crown, HWI has high performance products that will keep your furnace running harder and longer.



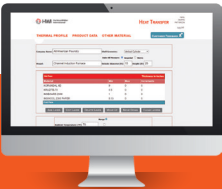
SAMPLE THERMAL PROFILE FOR CHANNEL INDUCTION FURNACE



HOT FACE TEMP (°F)	MATERIAL	THICKNESS (in)	MEAN TEMP (°F)
2,100	KORUNDAL XD®	9.00	1,922
1,745	KRUZITE®-70	4.50	1,620
1,495	INSBOARD 2300	1.00	1,024
554	INSWOOL® 2300 PAPER	0.13	445

Heat Flux: 647.31 BTU/Hr ft²
Ambient Temp: 70 °F
Vessel Temp: 2,100 °F

Shell Temp: 336 °F
Wind Velocity: 1 mph
Cold Face Emissivity: 2,100 °F



OPTIMIZE YOUR THERMAL EFFICIENCY WITH HWI'S HEAT TRANSFER WEB APP

Balance the performance of your refractory lining and energy savings by utilizing HWI's HeatTransfer tool to calculate thermal profiles for any vessel with any refractory lining configuration. Identify potential freeze planes, unit heat flux, shell temperatures, and dryout levels with the click of a button. Lining configurations and shell geometry are completely customizable with HWI and non-HWI products.

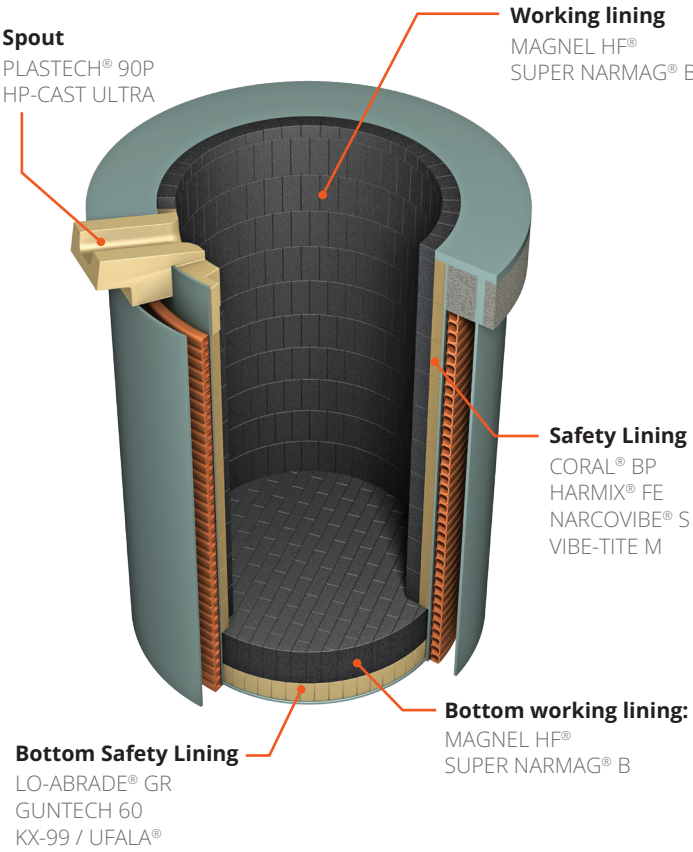
REGISTER AT
HeatTransfer.ThinkHWI.com
and help get the most out of
your refractory lining.



VACUUM INDUCTION MELTER

Vacuum Induction Melting is a critical process for producing superalloys containing reactive elements, offering more control over alloy composition and homogeneity when under an evacuated atmosphere. However, this process requires refractories that are extremely resistant to metal penetration, material pickup and thermal shock.

VACUUM INDUCTION MELTER



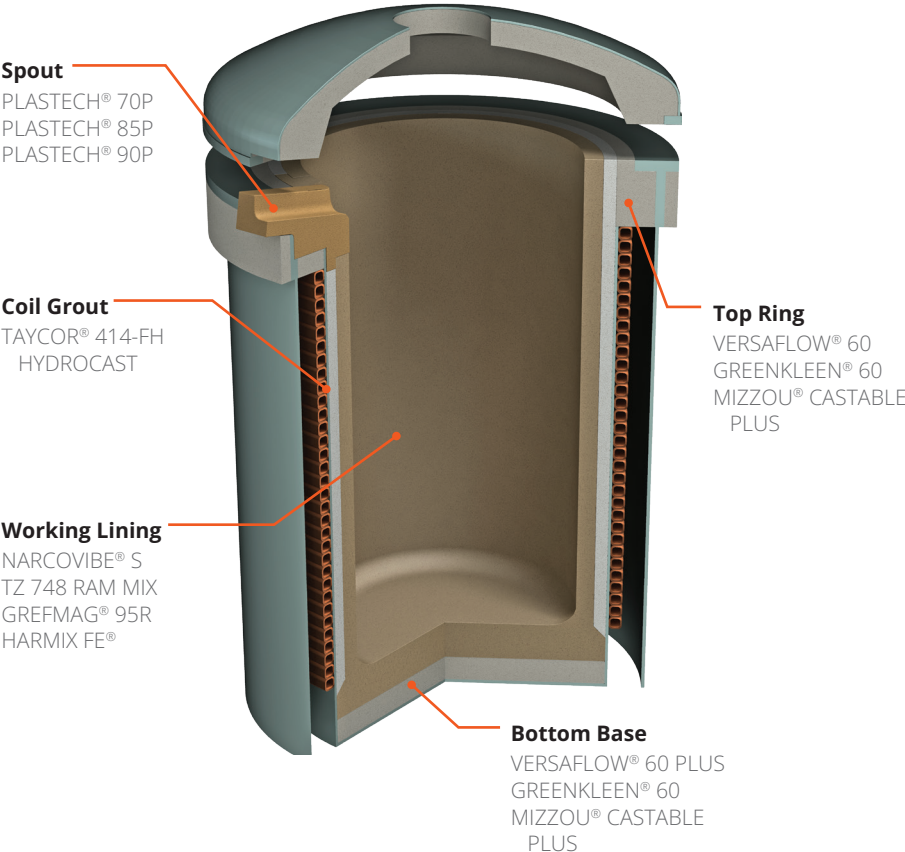
	CHEMICAL COMPOSITION, wt%	
	MAGNEL HF®	SUPER NARMAG® B
MgO	92.3	98.0
CaO	5.8	0.9
Si ₂ O ₃	1.0	0.4
Al ₂ O ₃	0.7	0.2
Fe ₂ O ₃	0.2	0.5

	PHYSICAL PROPERTIES	
	MAGNEL HF®	SUPER NARMAG® B
BULK DENSITY lb/ft ³ (g/cm ³)	186 (2.98)	186 (2.98)
HMOR at 70 °F (21 °C) at 2,300 °F (1260 °C) psi (MPa)	1,650 (11.4) 1,300 (9.0)	2,300 (15.9) 1,600 (11.0)
APPARENT POROSITY %	14.6	14.6

CORELESS INDUCTION MELTER

Coreless induction furnaces are very common in foundries and are only growing in popularity as many cupolas are being phased out due to environmental concerns. Coreless furnaces are popular for small and large foundries alike because of their ease of use, relative cleanliness compared to cupola operations, and ability for precise control of melt chemistries and temperatures.

CORELESS INDUCTION MELTER



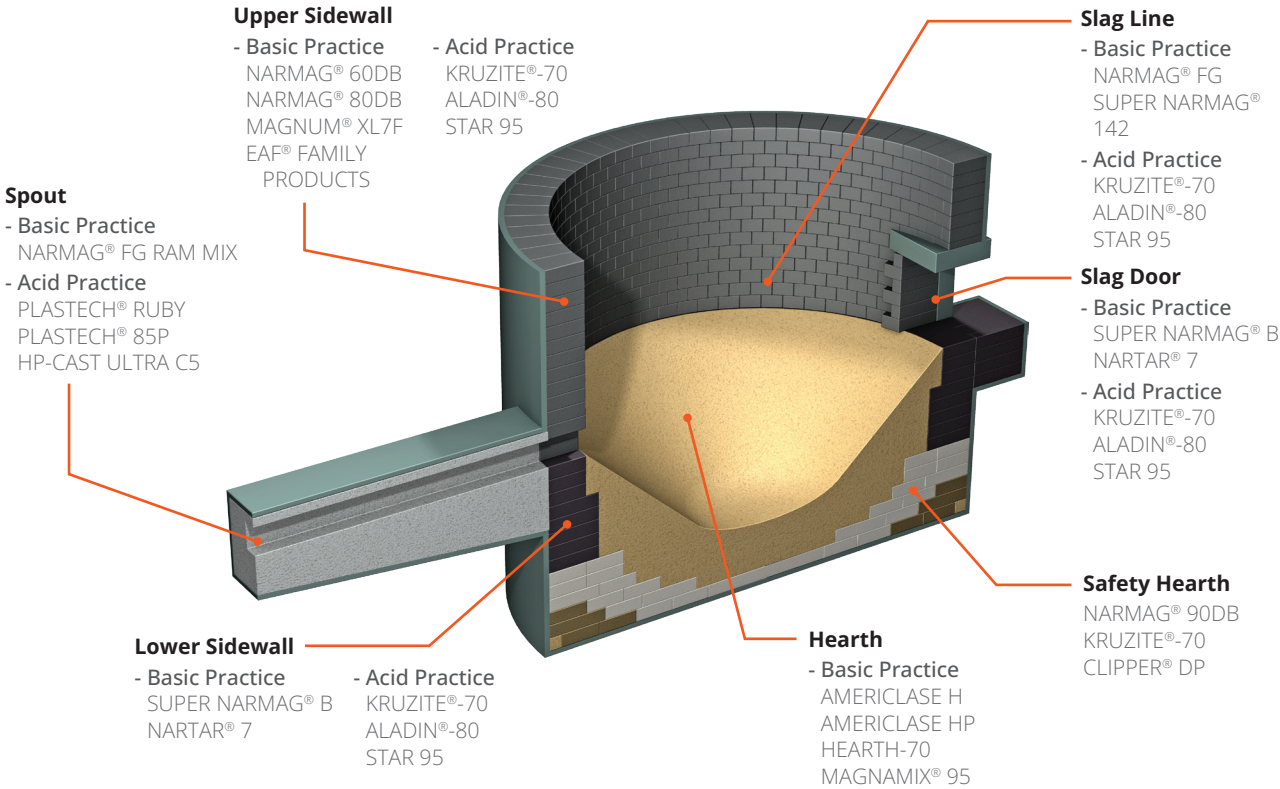
HIGH PERFORMANCE INSTALLERS OF HIGH PERFORMANCE REFRACTORY

Proper refractory installation can mean the difference between frequent unexpected shutdowns and optimized lining lifetimes, and that is especially important for Coreless Induction Melter installations to prevent leaking and aging of the coil. HWI is here to support you with a nationwide network of contractors and installers available to help you get the most out of your refractory materials. To help identify the best C/I for your job, email CINetwork@thinkHWI.com



ELECTRIC ARC FURNACE

Electric Arc Furnaces (EAF) are crucial for creation of high quality metals from low quality scrap, and are capable of doing so at fast conversion rates. However, this process requires highly engineered refractory solutions and a refractory supplier with the knowhow of identifying the right product for your operation.



MAINTENANCE GUNITES – BASIC PRACTICE	
MAGNAMIX 85G	Dry magnesite gunning mix with very good slag resistance and high strength. Good adhesion to refractory walls when gunned with pneumatic gunning equipment
AMERICLASE 94	Silicate bonded magnesia gunnite. Outstanding performance due to advanced high-purity matrix
MAINTENANCE GUNITES – ACID PRACTICE	
NARCOGUN 50BG	50% alumina gunning mix designed for bulk-feed batch guns.
VERSAGUN BF ADTECH	50% low-cement gunning mix designed to work with traditional gunning equipment

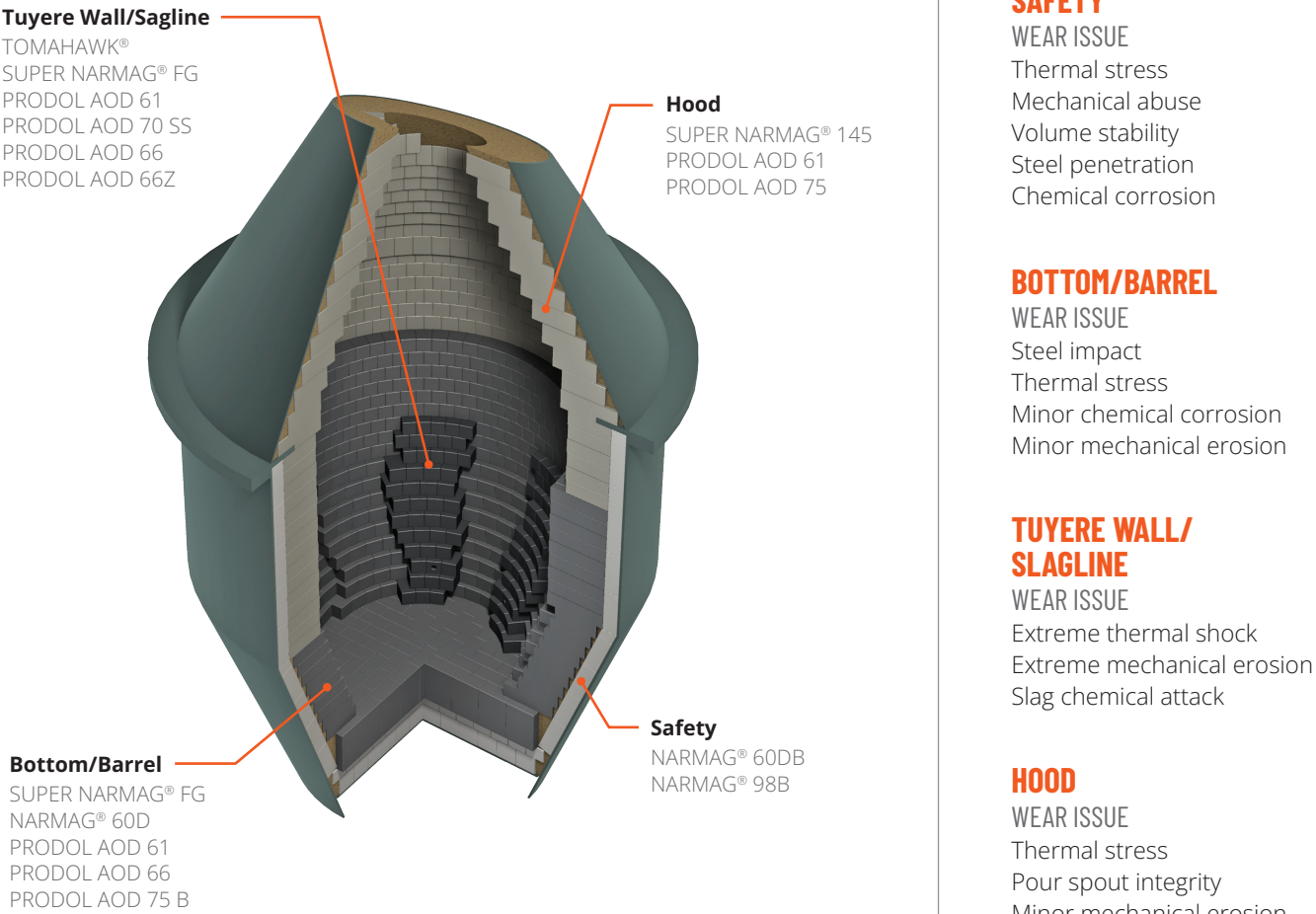
PRECAST EAF DELTA SHAPES

Utilize the highest performance refractory products cast to the most precise standards by utilizing HWI's pre-cast capabilities for your EAF delta. Consider products such as NARCON® 70, UNACAST® 1005X, or D-CAST 85 GOLD for your pre-cast delta shapes.



ARGON OXYGEN DECARBURIZATION FURNACE

HWI offers a proven, comprehensive refractory package for the AOD process. From high-purity, high-fired doloma based refractories, to high-purity, rebonded, fused-grain magnesia-chrome refractories, and high-purity, direct-bonded magnesia-chrome refractories, our products provide you with the properties you need to extend campaign performance. We work very closely with our customers to analyze and modify slag chemistry to best interact with a wide variety of refractories.



SAFETY
WEAR ISSUE
Thermal stress
Mechanical abuse
Volume stability
Steel penetration
Chemical corrosion

BOTTOM/BARREL
WEAR ISSUE
Steel impact
Thermal stress
Minor chemical corrosion
Minor mechanical erosion

TUYERE WALL/SLAGLINE
WEAR ISSUE
Extreme thermal shock
Extreme mechanical erosion
Slag chemical attack

HOOD
WEAR ISSUE
Thermal stress
Pour spout integrity
Minor mechanical erosion

LADLES

Ladles for foundry applications come in many different shapes in sizes. Smaller ladles call for rammed or cast shapes, while larger ladles can be bricked or utilize pre-cast shapes. With over 150 years of experience, HWI is prepared to help you identify the best refractory solution for your ladles.



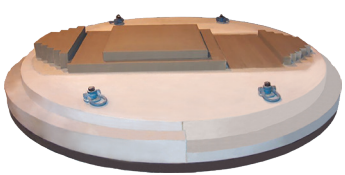
SACRIFICIAL LADLE COATINGS AND LADLE WASHES

HWI also offers a select line of wash coat products to protect the underlying refractory lining from chemical and slag attack, preventing buildup and reducing mechanical damage.

CLEANCOAT 6M	MgO-based sacrificial lining, great for de-skulling ladles. Separates easily from high-alumina linings due to differing CTE values.
BERLITE® DRY MORTAR	Aluminosilicate based ladle wash with carbon additives for non-wetting characteristics.
DOSSOLITE 1400	MgO based sacrificial lining, excellent for shops with tundishes or that have the capability to spray ladles.

FULLY ASSEMBLED PRODUCTS

Ladle linings can be zoned with different refractory qualities to match wear. High wear areas can be zoned with high purity materials for superior wear resistance. Impact pads may consist of a precast shape, a brick assembly, or a brick and castable assembly. In some cases, the refractory components are incorporated into a fully assembled bottom or cast shapes that are manufactured by HWI and sent to the customer as one piece. This allows for a quicker, more ergonomic installation process for shapes and components.



PRE-CAST LADLE BOTTOM ZONED FOR OPTIMIZED PERFORMANCE



LADLE STARTER RING FOR ERGONOMIC BRICK INSTALLATION

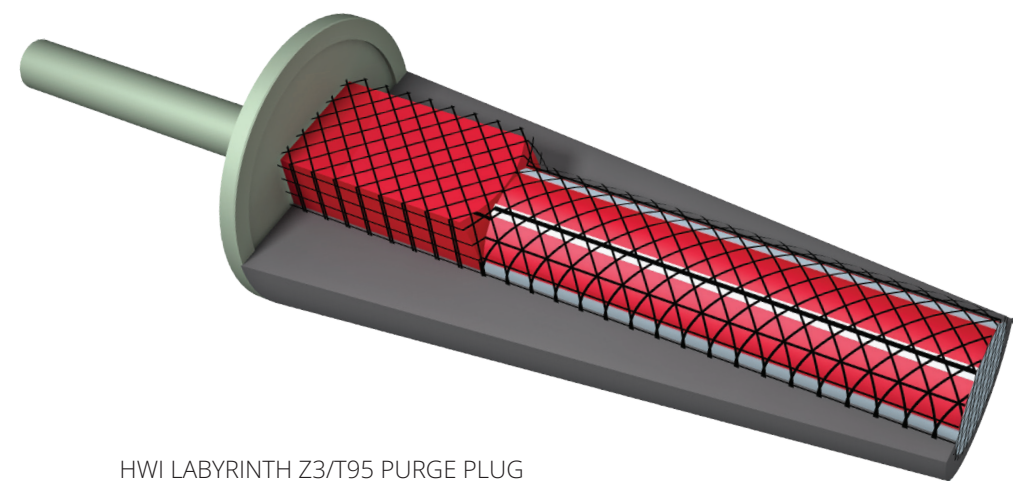
PRECAST LADLE DESIGN

- Precast ladle bottoms — zoned with high performance products to extend the lifetime of your ladle
- Precast or bricked starter rings — Improved refractory installation ergonomics by reducing lifting and bending
- Precast ladle sleeves — Reduce ladle downtime and enables the use of higher performance refractories

	TYPE	BRAND	Chemistry					Density	MOR		HMOR		CCS		
			Al ₂ O ₃	SiO ₂	SiC	CaO	MgO	P ₂ O ₅		After Drying	After Firing	At 1500°F	At 2500°F	After Drying	After Firing
STEEL			%					lb/ft ³ (g/cm ³)	psi (MPa)	psi (MPa)	psi (MPa)	psi (MPa)	psi (MPa)	psi (MPa)	
	Castables	HP-CAST ULTRA	96.1	0.1		2.6	0.9	183 (2.93)	2,100 (14.5)	5,000 (34.5)	3,000 (20.7)	3,500 (24.1)	9,000 (62.1)	9,700 (66.9)	
		FASTKAST® 80	15.0	80.2		1.2		163 (2.61)	1,800 (12.4)	2,200 (15.2)	4,200 (29.0)	2,300 (15.9)	11,600 (80.0)	9,400 (64.8)	
		D-CAST 85 TMCC	83.4	11.1		1.4	0.1	173 (2.77)	1,400 (9.7)	2,800 (19.3)	3,200 (22.1)	640 (4.4)	10,300 (71.0)	17,200 (118.6)	
	Ramming Plastics	PLASTECH® 90P	90.0	4.9		0.2	0.1	4.3	182 (2.92)	2,800 (19.3)	1,800 (12.4)	400 (2.8)	9,000 (62.0)	7,900 (54.5)	
	Brick	COMANCHE®	81.0				9.5		186 (2.98)		3,000 (20.7)				
		ALADIN® 80	77.6	16.7		0.3	0.1		173 (2.77)		1,900 (13.1)			8,500 (58.6)	
		ALADIN® 85	81.4	12.9		0.3	0.2		171 (2.74)		1,600 (11.0)			8,800 (60.1)	
Patching	GREFPATCH® 85	83.7	10.2		2.8			161 (2.60)	1,600 (11.0)	1,800 (12.4)			3,600 (24.8)	15,000 (103.4)	
GRAY IRON	Castables	ULTRA-EXPRESS® 70	71.0	25.2		0.9	0.1		167 (2.68)	1,850 (12.8)	3,200 (22.1)	4,200 (29.0)	1,375 (9.5)	13,500 (93.1)	22,500 (155.2)
		VERSAFLOW® 70	68.4	26.6		1.4			160 (2.56)	2,100 (14.5)	4,100 (28.3)		1,600 (11.0)	12,900 (89.0)	25,400 (175.2)
		MIZZOU CASTABLE® PLUS	59.2	34.9		2.3	0.1		143 (2.29)	1,300 (9.0)	1,100 (7.6)			8,600 (59.3)	4,000 (27.6)
		EXPRESS-30 PLUS	59.2	34.8		3.1	0.1		154 (2.47)	2,300 (15.9)	2,800 (19.3)	2,600 (17.9)	900 (6.2)	16,000 (110.3)	18,000 (124.1)
	Ramming Plastics	PLASTECH® 70P	69.1	23.1		0.2	0.2	4.3	153 (2.45)	1,700 (11.7)	2,000 (13.8)		1,100 (7.6)	8,200 (56.6)	8,800 (60.7)
	Brick	KRUZITE®-70	69.8	25.0		0.2	0.2		165 (2.64)		1,800 (12.4)		1,200 (8.3)		8,000 (55.2)
		ALADIN® 80	77.6	16.7		0.3	0.1		173 (2.77)		1,900 (13.1)				8,500 (58.6)
DUCTILE IRON	Castables	D-CAST 85 TMCC	83.4	11.1		1.4	0.1		173 (2.77)	1,400 (9.7)	2,800 (19.3)	3,200 (22.1)	640 (4.4)	10,300 (71.0)	17,200 (118.6)
		D-CAST 85 GOLD SiC4	82.6	8.9	3.8	0.5	0.1		178 (2.85)	1,300 (9.0)	2,600 (17.9)		1,200 (8.3)		18,000 (124.1)
		VERSAFLOW® 70 C	67.3	27.5		1.6	0.1		159 (2.55)	1,900 (13.1)	1,700 (11.7)		900 (6.2)	12,000 (82.8)	20,000 (137.9)
		MIZZOU CASTABLE® PLUS	59.2	34.9		2.3	0.1		143 (2.29)	1,300 (9.0)	1,100 (7.6)			8,600 (59.3)	4,000 (27.6)
	Ramming Plastics	PLASTECH 85P	84.0	7.7		0.2	0.3	4.4	160 (2.56)	2,000 (13.8)	2,700 (18.6)		500 (3.4)	5,300 (36.5)	8,200 (56.5)
	Brick	GREENPAK 85 MP PLUS	81.1	11.0		0.1	0.1	4.2	178 (2.85)	1,500 (10.3)	2,100 (14.5)				
		KRUZITE®-70	69.8	25.0		0.2	0.2		165 (2.64)		1,800 (12.4)		1,200 (8.3)		8,000 (55.2)
	ALADIN® 80	77.6	16.7		0.3	0.1		173 (2.77)		1,900 (13.1)				8,500 (58.6)	

POROUS PURGE PLUGS

Porous purge plugs in foundry ladles allow high volumes of inert gas in extremely fine bubbles to be passed through the molten metal for effective and efficient ladle processing. Violent stirring action produces an intimate mixture of metal, synthetic slag, and ladle additions, contributing to optimum results in iron desulfurization and similar or related operations.



HWI LABYRINTH Z3/T95 PURGE PLUG

STEEL PROCESSING	CAPILLARY	LABYRINTH® HPU	95% Alumina	Excellent wear resistance
	COMBINATION SLIT/CAPILLARY	LABYRINTH® Z3/T95	94% Alumina with thermal shock resistance	Excellent thermal shock resistance
	COMBINATION POROUS/SLIT	LABYRINTH® Z3/A94	95% Alumina with high-purity alumina porous core	Excellent stir reliability and wear resistance
IRON PROCESSING	POROUS	NARGON® A-90	90% Alumina with thermal shock resistance	Excellent wear and thermal shock resistance
	POROUS	NARGON® A-94	95% alumina with metal penetration resistance	Excellent wear and metal penetration resistance

REFRACTORY CERAMIC FIBER

INSWOOL® BLANKET



HWI's INSWOOL® Ceramic Fiber Blankets provide a complete product line for applications from 1500°F to 2600°F. These products are produced from a spun ceramic fiber which is needled into lightweight, flexible blankets. INSWOOL® Ceramic Fiber Blankets provide excellent handling strength, low thermal conductivity, low heat storage, and are resistant to thermal shock.

INSWOOL® PUMPABLE



INSWOOL® PUMPABLE is a lightweight material with very low thermal conductivity. It is an excellent thermal insulator. It dries to a firm, but compressible board-like consistency. It is suitable for expansion joints, and for filling contraction cracks. INSWOOL® PUMPABLE has excellent thermal shock resistance, and can generally be dried or put into heat containment service without preheating.

- High temperature caulking putty
- Now available in standard 10.3 oz. and 29 oz. caulking tubes, in addition to the standard 5 gallon pails
- Ready to use
- Easy to apply

MAXIMUM TEMPERATURE RATING	2,300°F	2,600°F
WET DENSITY (LB/FT3)	68	73
DRIED DENSITY (LB/FT3)	27	23
PERMANENT LINEAR CHANGE After heating to 1500 °F After heating to 2000 °F	+0.1% -3.1%	+0.5% -2.8%

SERVICE LIKE YOU'VE NEVER SEEN

DISTRIBUTION CENTERS (DC)

- Strategically placed throughout North America providing one of the quickest response times in the industry
- Dedicated sales personnel ready to respond 24/7/365
- Ready-to-ship inventory of our best-selling products
- Usually shipping with same-day or next-day delivery
- Staging and shipping to anywhere in the world
- Inventory solutions tailored to your business

Call **1-800-887-5555** to be immediately connected to the DC nearest you.

VALUE-ADDED SERVICES (VAS)

Enjoy the utmost in service. HWI's dedicated VAS team provides on-site management, installation, equipment, inventory management, and supervisory services. Benefits include:

- Single-source responsibility that delivers cost savings
- Just-in-time delivery of refractory materials, ensuring the freshest product on the jobsite
- Quick response times, minimizing outages and downtime
- More in-depth knowledge of your business, yielding the best refractory solutions

To learn more, contact us at:
VAS@thinkHWI.com

ADVANCED TECHNOLOGY AND RESEARCH CENTER (ATRC)

HWI has two ATRC centers for learning, testing, exploration, and innovation. Here in the United States, ATRC houses some of the brightest minds in the refractory industry. Our team of research and development experts works directly with our customers to design, test, and trial new products and applications.

Services include:

- Research and development of new applications and products
- Customer-focused product development
- Comprehensive technical analysis
- Quality-assurance testing
- Benchmark and failure analysis of refractory material
- Slag analysis
- Postmortem analysis
- Introductory refractory training to more highly customized education that is specific to your business (at your place or ours)

We're the thought leaders. The researchers. The innovators. The tech geeks. We're the refractory partners who won't melt when the heat is on, who live to solve your greatest challenges. Every day at HWI, we design solutions that help improve efficiencies, make installations easier, extend campaign lives, and save customers millions of dollars. And it all begins with our intensely driven service teams.

GLOBAL PROJECTS AND ENGINEERING

The Global Projects and Engineering Team specializes in greenfield construction, manufacturing and plant modernization, and also services the advanced engineering needs of existing facilities. These services include the following benefits:

- End-to-end delivery of refractories: drawings, products, and installation
- Expertise in all applications, including rapidly advancing technologies such as coal gasification units
- Strong conceptual drawing capabilities with meticulous attention to detail

Call **412-375-6920** to mobilize a HWI projects team today.

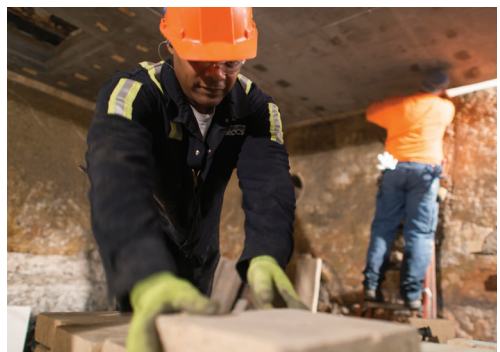
INSTALLATION, SERVICE, AND SUPPORT

- Support from HWI's network of premier independent contractor/installers
- Small emergency repairs to new plant construction
- Skills, resources, and experience to meet demanding specifications and time constraints

EDUCATION AND TRAINING

- Ongoing educational seminars at our Advanced Technology and Research Center
- Customized, on-site training for aluminum customers upon request
- Aluminum webcasts and video training modules upon request





PUT OUR INTENSITY TO WORK FOR YOU

Every day, our people and products stand up to the challenges of every job. As a global supplier, we'll save you time and money. And our experience in heat containment makes us the safest, most reliable choice for your investment.

We are your one-stop shop for refractory solutions. To learn more, talk with an HWI representative at **800-492-8349** or visit **thinkhwi.com**.



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